

# EXHIBIT C

# 公告本

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| 申請日期 | 81.5.1    |
| 案 號  | 81-055 PP |
| 類 別  | H05K7/20  |

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(以上各欄由本局填註)

## 發明 新型專利說明書

(請先閱讀背面之注意事項再填寫本頁各欄)

|            |               |               |
|------------|---------------|---------------|
| 一、發明<br>名稱 | 中 文           | 微處理器散熱裝置之固持結構 |
|            | 英 文           |               |
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## 五、創作說明( / )

本創作係關於一種微處理器散熱裝置之固持結構，其主要係於一風扇與散熱片間固設一固持片，該固持片兩側延伸形成彈性夾掣部，俾將該散熱裝置夾固於微處理器上，而提供一組裝更趨便利可靠之固持結構。

由於電腦教育的普及與實用效率的誘因，使電腦不再被視為莫諱高深的高度科技，且由目前使用電腦的普及率可發現，電腦正以驚人速度走入各個階層，而電腦處理事務之效率係為眾所肯定，然實際上電腦之所以具備傲人的處理能力，完全在於微處理器的統籌運作，儘管微處理器神通廣大，惟於應用上亦有嚴苛的客觀條件限制，如溫度的控制，即為維持微處理器正常工作之主要條件之一，以目前較大型積體電路多由陶瓷體構成，其工作時在未使用任何散熱裝置狀況下，可於表面產生攝氏一百度上下之高溫，此一高溫如未能有效排除，將使微處理器無法正常工作。

對於微處理器之散熱處理，目前的作法係於其上單獨配備散熱裝置，以揮散其工作時產生之高溫，該散熱裝置主要係由風扇及散熱片連結組成，其使散熱片直接於微處理器接觸，令微處理器產生之熱能傳導至散熱片上，再由風扇吹風揮散散熱片上之熱能，而為使散熱片固定於微處理器，一般多採膠合方式使其連合，惟以膠合方式連結將產生下列缺點：

(一) 無論何種膠劑，其本身均非良好導熱介質，遂該散熱

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## 五、創作說明(一)

片以膠合方式與微處理器連接，將降低微處理器與散熱片間之熱能傳導效率，並影響微處理器之散熱效果。

(一)該散熱片一經膠合於微處理器即呈恆久固定，當微處理器或散熱裝置任一須更換檢修時，即須連同散熱裝置及微處理器一併拆去，對於微處理器及散熱裝置之使用，顯然不符經濟效益。

由上述可知，以膠合方式連結散熱片及微處理器，無論就實用效率或經濟效益均明顯不符理想；而目前亦有部份業者於微處理器周邊加裝固定座，藉該固定座以螺合或綁固方式連結散熱片，此作法雖可排除膠合影響散熱效率之缺點，然於組裝程序及添置零件成本上仍不符精簡效率原則，且因其固定方式缺乏長期使用之要求，將影響產品使用壽命。

創作人有鑒於目前微處理器散熱裝置無論於組裝程序或散熱效率上均未臻理想，乃積多年從事業界及研發相關技術之豐沛經驗，經多次設計改良，終成功創作出一種可確保散熱效率且裝卸簡便迅速及可靠之固持裝置，以有效改善習用散熱裝置之缺點。

本創作之主要目的在提供一種可確保散熱效率且拆裝便利之可靠散熱裝置固持結構，其主要係於一風扇吹風口外側及下方分別連接一固持片及散熱片，其中固持片兩側分別延伸至散熱片外側，並形成一具彈性之夾掣部，藉該夾掣部將前述構件組成之散熱裝置夾設於微處理器上，令

## 五、創作說明(3)

散熱片底面貼鑄於微處理器表面幫助散熱，而藉該固持片及其夾掣部得使散熱裝置之組裝更趨便利迅速及可靠，並確保散熱效果。

為使 貴審查委員能進一步瞭解本創作之結構，特徵及其他目的，茲 附以圖式詳細說明如后：

## (一) . 圖式部份：

第一圖：係本創作之分解圖。

第二圖：係本創作之實施例剖視圖。

第三圖：係本創作之組合外觀圖。

## (二) . 圖號部份：

( 1 0 ) 風扇

( 1 1 ) 固定孔

( 1 2 ) 螺桿

( 2 0 ) 固持片

( 2 1 ) 通孔

( 2 2 ) 穿孔

( 2 3 ) 夾掣部

( 2 3 0 ) 鉤部

( 3 0 ) 散熱片

( 3 1 ) 散熱葉

( 3 2 ) 螺孔

( 4 0 ) 微處理器

有關本創作之結構部份，請首先參閱第一圖所示，其主要係由一風扇 ( 1 0 ) 四角落處分別形成固定孔 ( 1 1

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## 五、創作說明(4)

1, 其上分別以螺桿(12)依序螺固有固持片(20)及散熱片(30), 該固持片(20)及散熱片(30)規格係配合微處理器大小製成, 其中該固持片(20)中央形成有對應於風扇(10)吹風口之通孔(21), 其四角落處上亦形成有對應於該固定孔(20)之穿孔(22), 俾供螺桿(12)穿經, 其兩側端則分別延伸形成一具適當彈性之夾掣部(23), 兩夾掣部(23)並突伸於散熱片(30)外側, 其末端則分別形成有鈎部(230), 再散熱片(30)頂面對應於風扇(10)吹風口形成若干散熱葉(31), 藉由風扇(10)送風以揮散反散熱葉(31)間之熱能, 又該散熱片(30)四角落處分別形成有螺孔(32), 該螺孔(32)並對應於風扇(10)上之固定孔(11), 該風扇(10)以螺桿(12)穿經固持片(20), 並螺合於散熱片(30)上之螺孔(32), 而組成一散熱裝置。

以上述構件組成之散熱裝置, 係如第二圖所示, 該散熱裝置則得夾扣於微處理器(40)上, 如前揭所述, 該散熱裝置上之固持片(20)及散熱片(30)規格係配合微處理器(40)大小, 其中固持片(20)兩側夾掣部(23)之間距略小於微處理器(40)長度, 當固持片(20)壓向微處理器(40)時, 兩夾掣部(23)將略事向外撐張, 俟散熱片(30)底面完全與微處理器(40)表面接觸後, 固持片(20)不再下壓, 其兩側

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## 五、創作說明(5)

夾製部(23)將藉本身具備之回復彈性夾向微處理器(40)，並分別以其末端之鈎部(230)勾扣於微處理器(40)邊緣，即完成如第三圖所示之組裝型態，而以該等組裝方式不但可使散熱裝置穩固可靠地連結於微處理器(40)上，同時亦提供一迅速便利之組裝程序。

由於本創作係令散熱片(30)底面直接與微處理器(40)表面接觸，遂微處理器(40)於表面產生之高溫得充分為散熱片(30)所吸收，並經風扇(10)送風揮散，而微處理器(40)與散熱片(30)間並無任何影響熱能傳導之介質，遂得確保極佳之散熱效果；當微處理器(40)發生故障或須拆除檢測時，則可先行將散熱裝置撤去，其拆卸方式極為簡單，僅須以水平方向將固持片(20)拉離微處理器(40)即可，經撤去散熱裝置之微處理器(40)得更便於拆卸。

綜上所述，本創作係於散熱片與風扇間設一固持片，藉固持片兩側形成之彈性夾製部夾固於微處理器上，其下僅得獲致良好之散熱效果，同時亦提供一便利迅速可靠之裝卸程序，相較習用微處理器之散熱裝置，無論散熱效率、可靠程度、零件成本及組裝程序均有顯著之功效增進，遂已符合新型專利之要件，爰依法提起申請。

## 四、中文創作摘要(創作之名稱：)

## 微處理器散熱裝置之固持結構

本創作係關於一種微處理器散熱裝置之固持結構，其主要係於一風扇吹風口外側及下方分別連接一固持片及散熱片，其中固持片中央形成有通孔，得藉風扇送風揮散該散熱片之熱能，該固持片兩側分別延伸至散熱片外側，並形成一具彈性之夾掣部，藉該夾掣部將前述構件組成之散熱裝置夾設於微處理器上，令散熱片底面貼觸於微處理器表面幫助散熱，而藉該固持片及其夾掣部得使散熱裝置之組裝更趨便利迅速及可靠，且可使散熱效果更臻完善。

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## 英文創作摘要(創作之名稱：)

附註：本案已向

國(地區)申請專利。申請日期：

案號：

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## 六、申請專利範圍

一種微處理器散熱裝置之固持結構，其主要係於一風扇與散熱片間夾設有一固持片，該固持片中央形成有通孔，該通孔分別對應於風扇吹風口及散熱片之散熱葉，又固持片兩側分別延伸形成一具彈性之夾掣部，夾掣部末端並形成有鈎部，俾夾掣鈎扣於微處理器上者。

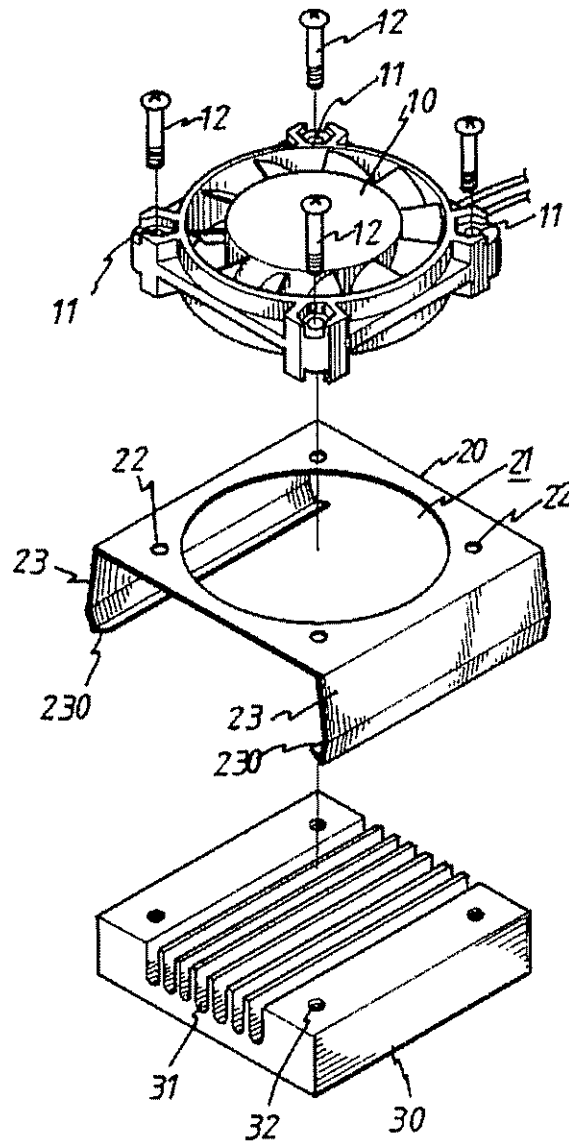
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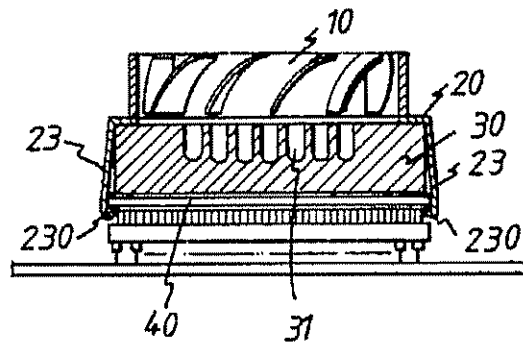
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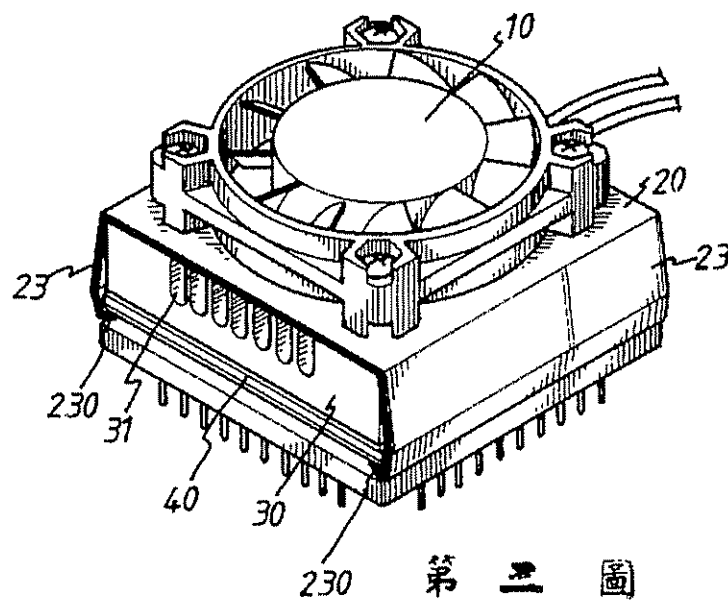


第一圖

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第二圖



第三圖

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| Date of Application | May 2, 1992 |
| Case No.            | 81205599    |
| Category            | H05K7/20    |

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| <b>Invention</b><br><b>Patent Description</b><br><b>New Utility Model</b> |   |   |
| I. Name of<br><b>Invention</b><br>New Utility<br>Model                    | Chinese   | Microprocessor heat dissipating device<br>holding structure |
|   | English   |   |
| II. <b>Inventor</b><br>Creator  | Name  | Yuan Cheng-wu   |
|   | Nationality<br>(Nationality)                    | Republic of China   |
|   | Address,<br>Residence                           | 2nd Floor, No. 629 Peian Road, Taipei<br>City               |
| III. Applicant  | Name<br>(Name)                                  | United Technology Corporation                               |
|   | Nationality<br>(Nationality)                    | Republic of China   |
|   | Residence,<br>Address<br>(Place of<br>Business) | 2nd Floor, No. 629 Peian Road, Taipei<br>City               |
|   | Name of<br>Representative                       | Yuan Cheng-wu   |

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|   |  |
|---|--|
| IV. Chinese Creation Abstract (Chinese Creation Name: )   |  |
| <p>Microprocessor Heat Dissipating Device Holding Structure</p> <p>The present creation is a microprocessor heat dissipating device holding structure, it mainly being the respective connection of a holding piece and heat sink to the outer side and below a fan air blowing outlet, wherein there is a through hole formed in the center of the holding piece to enable the fan to send air to dissipate the thermal energy of said heat sink, the two sides of said holding piece extending to the outer sides of the heat sink and forming a pawl portion having flexibility, said pawl portion clipping said heat dissipating device composed of the aforementioned components onto the microprocessor, causing the bottom surface of the heat sink to be stuck to the surface of the microprocessor to aid in dissipating heat, whereas said holding piece and its pawl portions make the assembly of the heating dissipating device more convenient, faster and reliable, and achieving perfection in the heat dissipating benefits.</p> |  |
| IV. English Creation Abstract (Chinese Creation Name: )   |  |
| <p>Note: An application for a patent in this case has already been submitted in the countries (regions) of , Date of application: Case No.:</p> <p>- 2 -</p>  |  |

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## V. Description of the Creation (I)

The present creation concerns a microprocessor heat dissipating device holding structure, it mainly being the mounting of a holding piece between a fan and heat sink, the two sides of said holding piece extending to form a flexible pawl portion, said heat dissipating device being clipped onto the microprocessor, thereby providing a holding structure whose assembly is more convenient and reliable.

Because of the popularization of computer education and the efficiency of utilization they result in, computers are no longer seen as the unattainable heights of science and technology, but it can be discovered from the rate of popularization of computer use at present that computers are now entering all levels at an alarming speed and the efficiency of computer processing of routine tasks has been universally affirmed. Still, the astounding processing capabilities that computers do in fact have lie completely in the centralized operation of microprocessors, and although microprocessors have outstanding powers there are still strict limitations by objective conditions such as temperature control, which is also one of the primary conditions for maintaining normal operation of microprocessors. Most of the larger types of integrated circuits at present are constructed from ceramics and when they are working in circumstances of using no heat dissipating devices whatsoever, they can generate high temperatures of around one hundred degrees Celsius at the surface, and if such a high temperature cannot be effectively eliminated it will make it impossible for the microprocessor to operate normally.

Current methods for heat dissipation processing for microprocessors involve configuration with independent heat dissipating devices to dissipate the high temperatures generated during their operation, said heat dissipating devices being composed primarily of fan and heat sink connections, the heat sinks they utilize being in direct contact with the microprocessor, causing the thermal energy generated by microprocessors to be transmitted onto the heat sink, with the thermal energy then being dissipated onto the heat sink by the blowing of a fan, but in order to affix the heat sink onto the microprocessor a bonding arrangement is usually used to connect them, but the bonding mode connection will lead to the following defects:

(I) Regardless of the type of glue, none are themselves excellent heat conduction media, and as said heat sink

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## V. Description of the Creation (2)

is connected to the microprocessor in a bonding arrangement it will reduce the heat transfer efficiency between the microprocessor and the heat sink and affect the heat dissipation benefits for the microprocessor.

(II) Once said heat sink has been bonded to the microprocessor it is permanently affixed and when either the microprocessor or the heat dissipating device require replacement or inspection it requires that the connected heat dissipating device be removed from the microprocessor, which obviously does not conform to economic benefits in using the microprocessor and heat dissipating device.

It can be seen from the above description that for heat sinks and microprocessors connected in a bonded manner, regardless of whether it concerns the efficiency of utilization or the economic benefits, both are obviously less than ideal; moreover, some in the industry at present have added mounting bases around microprocessors, said mounting bases being connected to the heat sink via screwing or riveting arrangements, and although this method can eliminate the defects of bonding that affect the efficiency of heat dissipation, because the assembly procedures and addition of components do not conform to the cost principles of precision and efficiency, and because their mounting mode lacks the requirement of long-term use, it will affect the useful lifespan of products.

The creators made use of the present heat dissipating devices of microprocessors being less than ideal, whether in assembly procedures or heat dissipation efficiency, and have accumulated abundant experience during many years of being involved in the industry and developing the associated technologies, and after several design improvements eventually successfully developed a holding device that can ensure heat dissipation efficiency as well as convenience, speed and reliability in assembly and disassembly in order to effectively improve the shortcomings of traditional heat dissipating devices.

The primary object of the present creation is to provide a reliable heat dissipating device holding structure that can ensure heat dissipation efficiency and convenience in disassembly and assembly, it primarily being a fan blowing outlet outer side and a holding piece and heat sink, respectively, connected beneath it, wherein the two sides of the holding piece extend, respectively, to the outer sides of the heat sink and form a flexible pawl portion, using said pawl portion to clip the heat sink device comprised of the aforementioned components onto the microprocessor, causing the

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## V. Description of the Creation (3)

bottom surface of the heat sink to be stuck to the surface of the microprocessor to aid in dissipating heat, whereas said holding piece and pawl portion can cause the assembly of the heat dissipating device to be more convenient and reliable, ensuring the heat dissipation benefits.

To enable the Honorable Examiners to further understand the structure and characteristics of the present creation and its object, detailed descriptions in the form of drawings are attached as follows:

## (I) The graphics portion:

Figure 1: Exploded diagram of the present creation.

Figure 2: Cross-sectional diagram of an embodiment of the present creation.

Figure 3: External view diagram of the combination of the present creation.

## (II) Graphic numbers portion:

|                     |                            |
|---------------------|----------------------------|
| (10) Fan            | (11) Mounting holes        |
| (12) Bolts          | (20) Holding piece         |
| (21) Through hole   | (22) Penetrating hole      |
| (23) Pawl portion   | (230) Hook portion         |
| (30) Heat sink      | (31) Heat dissipating fins |
| (32) Threaded holes | (40) Microprocessor        |

Regarding the structural portions of the present creation, please first refer to the illustration in Figure 1, it being composed primarily of a fan (10), mounting holes (11) formed at, respectively, the four corners,

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## V. Description of the Creation (4)

on which the separate bolts (12) screw in sequence to affix the holding piece (20) to the heat sink (30), the specifications of said holding piece (20) and heat sink (30) being fabricated to match the size of the microprocessor, wherein a through hole (21) is formed in the center of said holding piece (20) corresponding to the fan (10) blowing outlet, there also being penetrating holes (22) corresponding to said holding piece (20) formed on its four corners, provided for the bolts (12) to penetrate through the ends of its two sides extending, respectively, to form pawl portions (23) of suitable flexibility, the two pawl portions (23) also protruding outside of the heat sink (30), there being hook portions (230) formed separately at their ends, and with the top surface of the heat sink (30) corresponding to a certain number of heat dissipating fins (31) formed at the fan (10) blowing outlet, using the fan (10) to blow air to dissipate the thermal energy back between the heat dissipating fins (31), and with there being threaded holes (32) formed at, respectively, the four corners of said heat sink (30), said threaded holes (32) also corresponding to the mounting holes (11) on the fan (10), enabling the fan (10) to pass through the holding piece (20) with the bolts (12) being screwed into the threaded holes (32) of the heat sink (30), thereby composing a heat dissipating device.

The heat dissipating device of the above described component composition is as illustrated in Figure 2, said heat dissipating device being clipped onto the microprocessor (40), and as disclosed previously, the specifications of the holding piece (20) and heat sink (30) on said heat dissipating device match the size of the microprocessor (40), wherein the spacing of the pawl portions (23) of the two sides of the holding piece (20) are slightly less than the length of the microprocessor (40), and when the holding piece (20) is pressed toward the microprocessor (40) the two pawl portions (23) hold outward somewhat such that after the bottom surface of the heat sink (30) is in complete contact with the surface of the microprocessor (40) and the holding piece (20) is no longer pressed downward, the pawl portions (23) of its two sides

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Shaping Line

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## V. Description of the Creation (5)

with the return flexibility they themselves have clip onto the microprocessor (40) and hook with the respective hook portions (230) of their ends onto the edges of the microprocessor (40), i.e., completing the assembled state as illustrated in Figure 3, whereas said and other assembly modes not only can cause the heat dissipating device to be connected stably and reliably onto the microprocessor (40), they can also provide a fast and convenient assembly procedure.

Because the present creation causes the bottom surface of the heat sink (30) to be in direct contact with the surface of the microprocessor (40), the high temperatures generated at the surface of the microprocessor (40) are absorbed completely by the heat sink (30) and as the fan (10) sends air for dissipation, there is no medium between the microprocessor (40) and heat sink (30) that can affect the conduction of thermal energy, ensuring the optimum heat dissipation benefits; when a failure of the microprocessor (40) occurs or disassembly for inspection is required, the heat dissipating device can be removed first, its mode of disassembly being extremely simple, only requiring that the holding piece (20) be pulled away from the microprocessor (40), with the microprocessor (40) of the removed heat dissipating device being replaced for disassembly.

To summarize the above, the present creation places a holding piece between the heat sink and fan, with the flexible pawl portions formed at the two sides of the holding piece clipping onto the microprocessor, which not only produces excellent heat dissipation benefits but also provides as well a convenient and quick reliable assembly and disassembly procedure, which is a clever and effective improvement over conventional microprocessor heat dissipating devices regardless of whether it is in heat dissipating efficiency, degree of reliability, component costs or assembly procedures, an important aspect that conforms to a new utility model patent, so an application is submitted pursuant to the law.

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Stapling Line

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A7  
B7  
C7  
D7

## VI. Claims

A microprocessor heat dissipating device holding structure, it mainly involving the clipping of a holding piece between a fan and heat sink, said holding piece having a through hole formed in the center, said through hole corresponding to, respectively, the fan air blowing outlet and heat dissipating fins of the heat sink, and with the two sides of the holding piece respectively extending to form flexible pawl portions, the ends of the pawl portions also forming hook portions used to clip and hook onto the microprocessor.

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Stapling ..... Line .....

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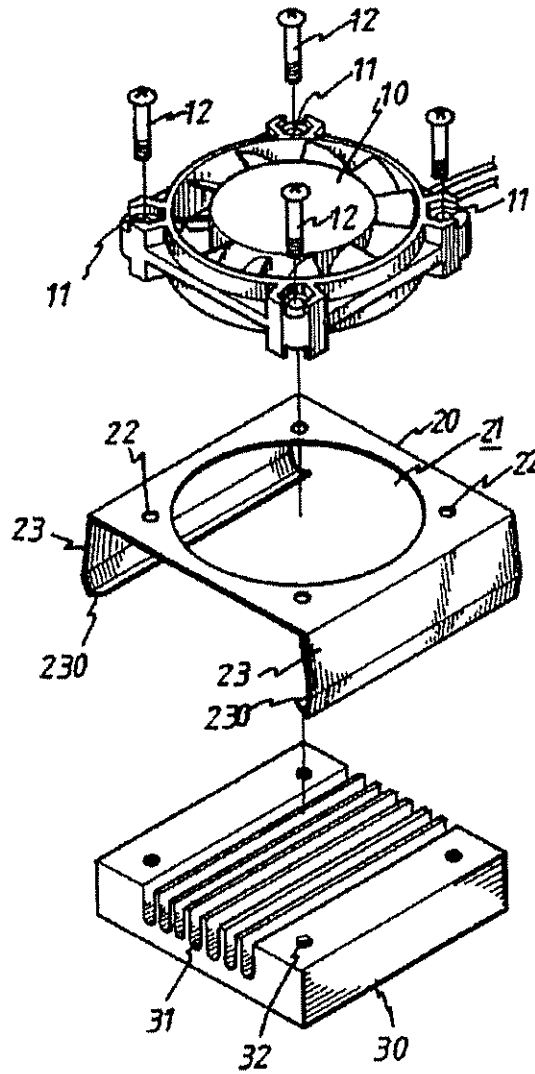


Figure 1

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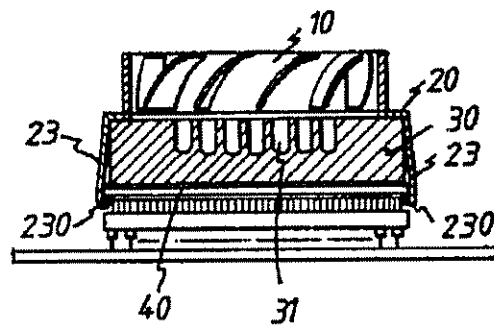


Figure 2

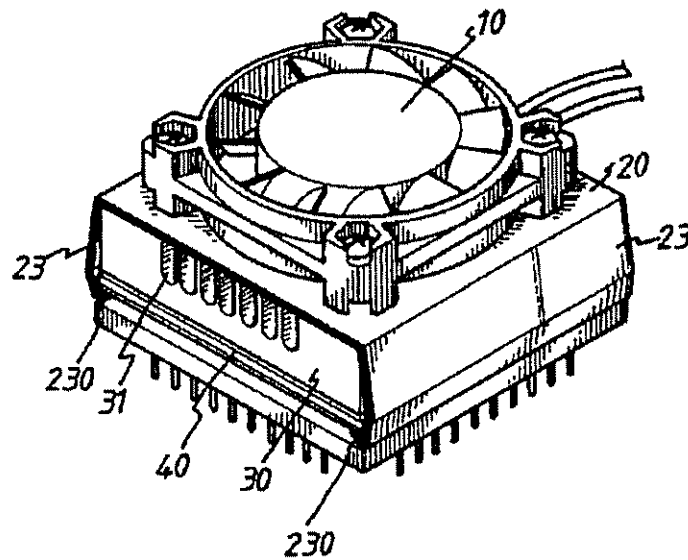


Figure 3



## CERTIFICATION

The following document was translated by OSTRANS, LLC from Chinese into English:

|                        |             |               |
|------------------------|-------------|---------------|
| <b>DISCLOSURE COPY</b> |             | <b>186944</b> |
| Date of Application    | May 2, 1992 |               |
| Case No.               | 81205599    | A4            |
| Category               | H05K7/20    | C4            |

(The above boxes will be filled in by this office)

|  |         |   |
|--|---------|---|
| <b>Invention</b>                                       |         |   |
| <b>Patent Description</b>                              |         |   |
| <b>New Utility Model</b>                               |         |   |
| I. Name of<br><b>Invention</b><br>New Utility<br>Model | Chinese | Microprocessor heat dissipating device<br>holding structure |

This represents an accurate and complete English translation of the original Chinese-language document to the best of our ability and belief.

A handwritten signature in black ink, appearing to read "Robert G. Sellin", written in a cursive style.

Robert G. Sellin  
October 18, 2004

OSTRANS ref. no.: 7091